

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**FUNDAMENTALS OF MECHANICAL DRAWING W/LAB
MET 1100**

Lecture/Lab Hours: 3/3

Credit Hours: 3

Date Revised: Spring 2017

Catalog Course Description

A broadly focused course that introduces students to mechanical engineering drawings, drawing types, computer-aided drawing and fundamental design. Sketching and then SolidWorks software are used as tools to teach basic principles involved in the development and production of mechanical engineering and related drawings.

Prerequisites

None

Co-requisites

None

Textbooks and Other Supplies

Textbooks:

*Parametric Modeling with SolidWorks*_most recent edition,_Schilling, Shih, SDC Publications

Reference:

Technical Drawing, 13th ed., Giesecke, Mitchel, Spencer, Hill, Dygdon & Novak, Prentice Hall, 2009.

Equipment:

- A. White vinyl eraser (or pink pearl 400 A eraser - Optional)
- B. Storage media for computer files
- C. Other equipment as may be required

Week/Topic Basis

Week	Topic
1	Course Introduction File organization

	Introduction to SolidWorks environment
	Introduction to engineering drawing concepts
2	Standard views: top, front, right side
3	Parametric Modeling fundamentals
4	Constructive solid geometry concepts
5	Feature design tree
6	Geometric relations fundamentals
7	Geometric construction tools
8	Continue with construction tools
9	Part drawings, sheets and dimensioning
10-11	Continue dimensioning
12	Section views
13-14	Auxiliary views
15	Solid Works Final Project

Engineering Technology General Outcomes (Educational objectives)

- I. Apply basic engineering theories and concepts creatively to analyze and solve technical problems.
- II. Utilize with a high degree of knowledge and skill equipment, instruments, software, and technical reference materials currently used in industry.
- III. Communicate effectively using developed writing, speaking, and graphics skills.
- IV. Assimilate and practice the concepts and principles of working in a team environment.
- V. Obtain employment within the discipline or matriculate to a four year program in engineering or industrial technology.

Engineering Technology Concentration Competencies

NOTE: At the program level all 6 competencies apply to roman numerals I – V of the Engineering Technology General Outcomes (Educational objectives) listed above.

Students will

- A. Apply the knowledge, techniques, skills, and modern tools for the concentration of study to specifically defined engineering technology activities.
- B. Demonstrate the knowledge of mathematics, science, engineering and technology to engineering technology problems using developed practical knowledge.

- C. Conduct and report the results of standard tests and measurements, and conduct, analyze and interpret experiment or project results.
- D. Function effectively as a member of a technical team.
- E. Identify, analyze and solve specifically defined engineering technology-based problems.
- F. Employ written, oral and visual communication in a technical environment.

Course Goals

NOTE: Capital letters after course goals reference goals of the Engineering Technology Program.

The course will

1. Represent objects using orthographic projection (3-Views, isometric, section, auxiliary) and sketches (A,G)
2. Be familiar with basic geometry and understand geometric construction.(A,F)
3. Use fundamental mechanical dimensioning standards, lettering, graphic standards and techniques required for technical drawing.(A,G)
4. Construct 2D drawings with annotation using Computer Aided Drafting (CAD) software.(A,B,G)
5. Construct 3D models using parametric solid modeling software.(A,B,C,D,F,H,K)
6. Understand the relationship of various engineering drawing disciplines to the basic principles of engineering drawing.(A,G,H)
7. Evaluate drawing geometry.(A,C,F)

Expected Student Learning Outcomes

NOTE: Numbers after Expected Student Learning Outcomes reference the course goals listed above.

The student will

- a. Understand how to read and use an engineering scale. (1,6,7)
- b. Understand how to read and use measuring calipers. (1)
- c. Demonstrate proper sketching techniques for basic drawing. (2,3,6,7)
- d. Demonstrate knowledge of lettering standards and techniques. (4,6)
- e. Perform basic geometric constructions. (2,6,7)
- f. Know alphabet of lines. (3,7)
- g. Use of orthographic projection. (1,2,6,7)
- h. Demonstrate proper placement, orientation and spacing of views. (1,7)
- i. Demonstrate knowledge of fundamental ANSI standards for dimensioning. (4)
- j. Understand and correctly present sectional views. (2,7)
- k. Use CAD as a drafting tool to produce accurate 2D drawings. (1,2,6,7)
- l. Use CAD concepts such a layers, symbols, snaps, reference files, settings etc. to organize drawings. (1,6,7)
- m. Use CAD annotation commands such as dimensions, text, titleblocks, etc to enumerate technical information. (1,3,4,6,7)

- n. Produce plots according to industry standards. (1,3,4,6,7)
- o. Use SolidWorks application to generate 3D parametric models. (1,2,5)
- p. Use SolidWorks parametric commands to modify 3D models. (1,5,7)
- q. Use SolidWorks Sheet file application to create annotated 2D drawing. (1,3,4,5,7)
- r. Use email and other digital communication tools to send and receive technical information. (1)
- s. Use keyboard shortcuts to navigate and initiate application commands. (1).

Evaluation

Evaluation of student work is required in this course. The instructor will provide guidelines and requirements for each project. Total evaluation is based on the following point distribution.

Testing Procedures

Solid Works Projects	5 points
Homework/Presentation	5 Points
Final Exam	90 Points

Laboratory Experiences

N/A

Field Work

N/A

Other Evaluation Methods

N/A

Grading Scale

Final grade for this course will be based on the following alphabetical/numerical scale.

A	90-100
B+	85–89.9
B	80-84.9
C+	75-79.9
C	70-74.9
D	60-69.9
F	Below 60

Policies

Attendance Policy

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. [Disability Services](#) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

Other Policies

Safety and Equipment Abuse:

Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury could result in automatic failure of the course